(2)

Do We Practice What We Preach?
Recent Exercises and the Operational Art

A Monograph
by

Major Michael R. Thompson
Infantry

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

Second Term, AY 89/90

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION School of Advanced Military Studies, USAC&GSC 6b. OFFICE SYMBOL (If applicable) ATZL-SWV	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) Fort Leavenworth, Kansas 66027-6900	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)
Do We Practice What We Preach?
Recent Exercises and the Operational Art (U)

12. PERSONAL AUTHOR(S)
MAJ(P) Michael R. Thompson, USA

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Monograph	FROM _____ TO _____	90/04/27	54

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	Exercises	Operational Art	Doctrine
			Maneuver	Intelligence	Deception
			Fires	Sustainment	AirLand Battle

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This monograph explores current U.S. operational level doctrine and exercises conducted over the past four years. The principle research question is "to what degree is AirLand Battle doctrine being applied at the operational level in recent exercises." Research focuses on what we practice versus what we preach. What we preach includes current doctrine in Army field manuals and the views of a variety of contemporary authors. What we practice is extracted from exercises conducted over the last four years in an attempt to determine the extent of doctrinal application in these exercises. The exercises are from two potential mid- to high-intensity theaters: Europe and Korea. Conclusions are that exercises tend to focus on the science of operational warfighting with little application of the art. Recommendations are to develop exercises specifically (Continued on other side of form)

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION	
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL MAJ(P) Michael R. Thompson	22b TELEPHONE (Include Area Code) (913) 684-2138	22c. OFFICE SYMBOL ATZL-SWV

DD Form 1473, JUN 86 Previous editions are obsolete. SECURITY CLASSIFICATION OF THIS PAGE

UNCLASSIFIED

Item 19 cont.

targeted to the operational commander and his staff by combining field exercises with computer simulations comparable to our tactical level exercise facilities.

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major Michael R. Thompson

Title of Monograph: Do We Practice What We Preach? Recent Exercises and the Operational Art

Approved by:

Lieutenant Colonel John P. Dunigan, MA — Monograph Director

Colonel William H. Janes, MA, MMAS — Director, School of Advanced Military Studies

Philip J. Brookes, Ph.D. — Director, Graduate Degree Program

Accepted this 17th day of June 1990

ABSTRACT

The introduction of the operational art into U.S. Army doctrine is part of a significant chapter in U.S. Army history. It has been eight years since this operational level concept was introduced in the 1982 edition of FM 100-5 *Operations*. The first generation of Army planners raised under this keystone warfighting manual are only now commanding and staffing operational level commands throughout the Army.

This monograph explores current U.S. operational level doctrine and exercises conducted over the past four years. The principle research question is "to what degree is AirLand Battle doctrine being applied at the operational level in recent exercises." Research focuses on what we practice versus what we preach. What we preach includes current doctrine in Army field manuals and the views of a variety of contemporary authors. What we practice is extracted from exercises conducted over the last four years in an attempt to determine the extent of doctrinal application in these exercises. The exercises are from two potential mid- to high-intensity theaters: Europe and Korea.

Conclusions are that exercises tend to focus on the science of operational warfighting with little application of the art. Recommendations are to develop exercises specifically targeted to the operational commander and his staff by combining field exercises with computer simulations comparable to our tactical level exercise facilities.

TABLE OF CONTENTS

I. INTRODUCTION

The introduction of the operational art into U.S. Army doctrine is part of a significant chapter in U.S. Army history. During the decade of the 1970s, the combined effects of a massive Soviet buildup, divided U.S. political sentiments in the aftermath of Vietnam, the Arab-Israeli War of 1973, and an ill received 1976 "active defense" doctrine all gave birth to a vigorous doctrinal debate within the United States. From this debate, AirLand doctrine emerged and with it, the notion of the operational level of war[1].

It has been eight years since this operational level concept was introduced in the 1982 edition of FM 100-5 *Operations*. The first generation of Army planners raised under this keystone warfighting manual are only now commanding and staffing operational level commands throughout the Army. What are the implications and lessons learned as we apply our operational level doctrine to war time contingencies in a real world context?

This monograph explores current U.S. operational level doctrine and exercises conducted over the past four years. The principle research question is "to what degree is AirLand Battle doctrine being applied at the operational level in recent exercises."

Research focuses on what we practice versus what we preach. What we preach includes current doctrine in Army field manuals and the views of a variety of contemporary authors. What we practice is extracted from exercises conducted over the last four years in an attempt to determine the extent of doctrinal application in these

---

[1]John L. Romjue, "AirLand Battle: The Historical Background," Battle Command Training Program (BCTP) Professional Reading Pamphlet, U.S. Command and General Staff College, Ft Leavenworth, Kansas, 14 August, 1987, pp. 1-4.

exercises. The exercises are from two potential mid- to high-intensity theaters: Europe and Korea.

Exercise analysis examines the three essential questions asked of the operational commander in FM 100 -5, *Operations:*[2]

> *(1) What military condition must be produced in the theater of war or operations to achieve the strategic goal?*
>
> *(2) What sequence of actions is most likely to produce that condition?*
>
> *(3) How should the resources of the force be applied to accomplish that sequence of actions?*

The major operational functions contained in FM 100-6 *Large Unit Operations (Coordinating Draft)* are used as criteria.[3]

* **Maneuver:** How was operational maneuver used to gain operational advantage?

* **Fires:** How were fires planned and executed to facilitate maneuver to operational depths, isolate the battlefield, and destroy critical functions and facilities having operational significance?

* **Intelligence:** How effective was the intelligence effort in situation development, target development, EW, security and deception, and indications and warning?

* **Deception:** Was deception appropriately targeted, timed, and scaled? Was it plausible and consistent?

* **Sustainment:** Did the sustainment concept provide the means to execute the operational concept? Did the operation reach its culminating point prematurely?

The monograph concludes with a summary and analysis of major findings within the framework of the above criteria.

---

[2]Field Manual (FM) 100-5, *Operations*. Washington, DC: Headquarters, Department of the Army, May 1986., p. 10

[3]FM 100-6 *Large Unit Operations (Coordinating Draft)*, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 30 September 1987, pp. 3-12 to 3-17.

Implications are also presented as they may apply to future exercises and the continued evolution of operational doctrine.

II. DOCTRINAL FRAMEWORK

> *Principles, rules, regulations, and methods are, however, indispensable concepts to or for that part of the theory of war that leads to positive doctrines; for in these doctrines the truth can express itself only in such compressed forms.*[4]

What do we expect from doctrine? Clausewitz's thoughts on doctrine are as relevant today as they were over a century ago. Doctrine should be a compressed reduction of tried principles that guide thought; not prescription requiring dogmatic adherence. It provides a framework to steady judgement. The concepts cannot be absolute binding frameworks, but rather born in mind by the commander "so as not to loose the benefit of truth they contain in cases where they do apply." Clausewitz goes on to illustrate the increased value of doctrine at lower tactical levels. Doctrine is used to supplement experience. True insight and mature judgement is most often lacking in lower ranking officer ranks and therefore doctrine becomes more critical. It guides against "eccentric and mistaken schemes" and "reduces natural friction."[5]

The above analysis presumes *true insight and mature judgement* at higher levels. Presumedly, Clausewitz would expect this level of experience at what we today term the operational level of war. If this experience level existed, operational level doctrine would be less critical. But can we presume true insight and mature judgement at this level?

---

[4]Carl von Clausewitz, *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1976, p. 152.
[5]Ibid.

A natural starting point for establishing the doctrinal framework from which to begin exercise analysis is the Army's keystone warfighting manual FM 100-5, *Operations*. It is intended to be "the authoritative foundation for subordinate doctrine" and "the principle tool for professional self-education in the art and science of war."[6] As a cornerstone manual, it is a condensed expression of the of the Army's fundamental doctrine; "its approach to fighting campaigns, major operations, battles, and engagements."[7]

Key words above are "keystone", "foundation", and "fundamental." FM 100-5 goes a long way in embracing the concept of the operational level of war but provides little in the way of practical application. This is not a problem if the intended purpose of the manual is limited to laying the foundation. But where is the "principal tool of professional self-education in the art and science" for the operational level of war beyond this doctrinal framework?

Interesting enough, we seem to have gone full circle to our situation prior to WW II. When General Bradley was faced with the task of forming an army group in the midst of the invasion across France, American experience was limited to Pershing's few weeks experience at the end of WW I. Doctrine was limited to a chapter of theory in FM 100-15 *Field Service Regulations, Larger Units.* "[As] late as 1944 ... the number of officers having a reasonable knowledge of it totaled exactly zero."[8] As a result, commanders and staffs had to develop the necessary operational level experience in the face of combat without the benefit of adequate doctrine.

---

[6]FM 100-5, p. i.

[7]FM 100-5, p. 6.

[8]Russell F. Weigley, *Eisenhower's Lieutenants*. Bloomington: Indiana University Press, 1981, p. 182.

Colonel L.D. Holder makes a similar comment regarding our situation over forty years later. "For all practical purposes the study of operations ended in the US Army after World War II. ... we have become an army of amateurs in one of the most critical military subjects. ... we have not only neglected to discuss operational art, but we have even refused to think about it." We now have over 40 years of lost ground to recover and must do so without the benefit of experience of anyone now remaining in uniform.[9]

This is not to say the Army is sitting idle. From a doctrinal standpoint, at least, evolution continues. Even such critics as Senator Gary Hart and William Lind acknowledge significant progress in the Army's operational level development and anticipate continued progress.[10] Yet even though FM 100-5 is highly lauded as a major step in the right direction, problems exist applying the doctrine at the operational level.

Colonel John F. Meehan III argues AirLand Battle doctrine is essentially a *tactical* doctrine, oriented on how to fight at the tactical level. As the critical link in the "operational trilogy" (the hierarchical flow of conceptual thought from the strategic to the operational to the tactical levels of war), he sees the operational level of war including an almost even balance of all four elements of national power: political, economic, psychological, and military. Only through evaluation of all four of these elements from a theater perspective, can the enemy's center of gravity be correctly assessed, objectives be determined,

---

[9]L.D. Holder, "Operational Art in the US Army: New Vigor," *Essays on Strategy III*, National Defense University Press, Washington , D.C., 1986, p. 116, as quoted by Major General Edward B. Atkeson, "The Operational Level of War," *Military Review*, March 1987, p. 31.

[10]Gary Hart with William S. Lind, *America Can Win: The Case for Military Reform*, Adler & Adler Publishers, Bethesda, Md., 1986, p. 36, quoted by Atkeson, "Operational Level of War," *Military Review*, March 1978, p. 29.

and the mission be accomplished.[11] These concepts do not necessarily contradict FM 100-5, but rather expand the application of AirLand Battle doctrine at the operational level.

Colonel William H. Janes argues the difficulty applying AirLand Battle doctrine from a different perspective. While he accepts AirLand Battle as a viable operational doctrine, his focus is on the disconnect between the theory promulgated in FM 100-5 and application in NATO. The politically motivated concept of forward defense and constraints against cross border operations into Warsaw Pact countries make application of AirLand Battle at the operational level difficult.[12] While the preface of FM 100-5 claims consonance with NATO *tactical* doctrine (Allied Tactical Publication 35A), disconnects at the operational level are apparent.

Another problem in applying AirLand Battle doctrine at the operational level is the joint and combined nature of warfighting. By definition, the operational level most often involves the aspects of both.[13] Yet, FM 100-5 is an Army field manual and it is written for U.S. forces.[14] What is the link to joint and combined doctrine?

There is nothing wrong with FM 100-5 remaining a cornerstone manual, limited to a condensed expression of the Army's fundamental doctrine. But something more is required. If we are to recover the lost ground discussed by Colonel Holder, succeed in practical application of its concepts, and link our doctrine in a joint and combined

---

[11]John F. Meehan III, Colonel, "The Operational Trilogy," *Parameters*, Autumn 1986, pp. 9-18.

[12]William H. Janes, "Operational Art in NATO: How Will Politically Motivated Restrictions Affect Operational Maneuver?" Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 10 January 1988, pp. 1-35.

[13]FM 100-5, p. 28.

[14]Clayton R. Newell, "The Technological Future of War," *Military Review*, October 1989, p. 38.

environment, we need a common base from which to experiment. From this common doctrinal base, operational concepts can be practiced and further refined. Only through such a rigorous process will true insight and mature judgement develop.

> *[This common doctrinal base] must be rooted in time-tested theories and principles, yet forward-looking and adaptable to changing technology, threats, and missions. It must be definitive enough to guide operations, yet versatile enough to accommodate a wide variety of worldwide situations. Finally, to be useful, doctrine must be uniformly known and understood.*[15]

FM 100-6, *Large Unit Operations (Coordinating Draft)* is a major evolutionary step in bringing operational level doctrine closer to fruition. FM 100-6 specifically focuses at the operational level. "[It] establishes doctrine for the operation and functioning of organizations between the strategic and tactical levels of war."[16] The criteria listed in Section I (operational maneuver, fires, intelligence, deception, and sustainment) is taken from FM 100-6. Section III uses these criteria to examine current doctrine and exercise application.

As of December 1989, the TRADOC concept called for publication of two manuals to link tactical doctrine with FM 100-5, FM 100-20, *Military Operations in Low-Intensity Conflict (Final Draft)*, and appropriate JCS publications. The first, FM 100-6 (to be renamed *Operational Art*) was to describe planning, organization and conduct of campaigns and major operations. The second, FM 100-7, *Army Component Operations,* was to discuss the roles and responsibilities of the army component commander assigned to a joint task force.[17] As of mid-January, however, the latest TRADOC concept was to merge both into a single manual, FM 100-7, *The Army in Theater Operations.* This manual is to cover the

---

[15] FM 100-5, p. 6..

[16] FM 100-6 (Coordinating Draft), p. i.

[17] TRADOC Doctrine Conference, *Doctrine for a Changing Army*, Concept Slides, HQ, U.S. Army Training and Doctrine Command, Ft Monroe, VA. dated 18-19 December 1989.

Army's role in operations *and* support within a theater or area of operation, linking tactical doctrinal manuals with FM 100-5, FM 100-20, and appropriate JCS Pubs. According to the draft preface, the manual is to be fully compatible with FM 100-5 and will also link guidance from joint publications with Army doctrinal manuals.[18] My understanding of this linkage is shown in figure 1.

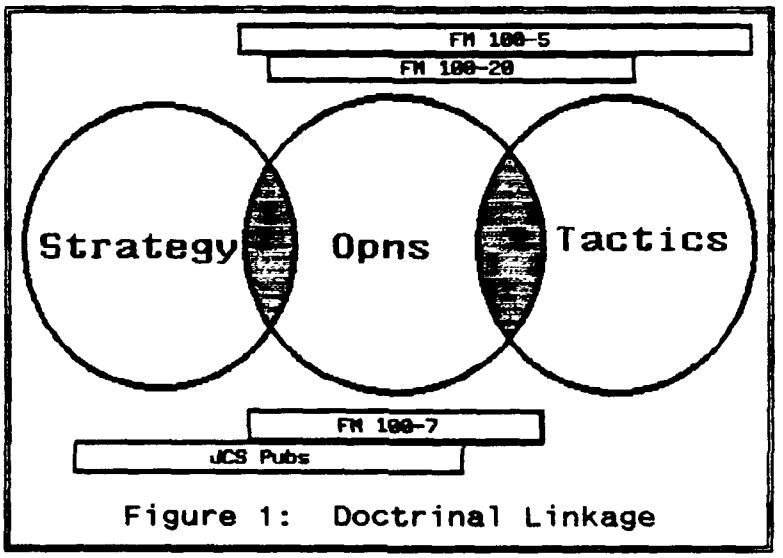

Figure 1: Doctrinal Linkage

FM 100-7 modifies the list of operational functions listed in FM 100-6. Command and control and protection are added, maneuver is renamed movement and maneuver, and deception is deleted.[19] TRADOC Pam 11-9, *Blueprint of the Battlefield (Draft)*, uses this same list and labels them Operational Operating Systems (OOS).[20] Similarities and differences are shown in figure 2.

---

[18]FM 100-7 (draft preface), 16 Jan 90, provided by LTC Calvin R. Graef, CTAC, U.S. Army Command and General Staff College, Fort Leavenworth, KS.

[19]Ibid.

[20]TRADOC Pam 11-9, *Blueprint of the Battlefield (Draft)*, dated 9 June 1989, pp. 4-1 to 4-14.

FM 100-6	FM 100-7 & Pam 11-9
Operational Maneuver	Operational Movement and Maneuver
Operational Fires	Operational Fires
Operational Intelligence	Operational Intelligence
Operational Deception	***
***	Operational Protection
Operational Sustainment	Operational Support
***	Operational Command & Control

Figure 2 Major Operational Functions

The intent of the preceding discussion is not to argue the merits of any particular list but rather to illustrate that the doctrine is still evolving. According to the authors of FM 100-7, their charter is to avoid focus on laundry lists and instead focus on substance.[21] The next section uses the operational functions as listed in FM 100-6 because they are published and provide a framework for analysis. The merits of including one operational function over another to formulate an "official" set of Operational Operating Systems is beyond the scope of this paper and is less relevant than the substance contained in each.

III. WHAT WE PRACTICE, WHAT WE PREACH

This section examines what we say our operational doctrine is and application in recent exercises. Primary doctrinal sources are FM 100-5, *Operations* and FM 100-6, *Large Unit Operations (Coordinating Draft).* It also provides analysis from various contemporary authors regarding what they think these criteria mean or should mean. Many of these writings have influenced past doctrinal

[21]MAJ William V. Allen, HQ, TRADOC action officer, phone conversation on 31 January, 1990.

development and will, most likely, continue to influence the evolution of our operational doctrine.[22]

Exercise analysis focuses on two theaters: Central Europe and Korea. It is further limited to the 1986-1990 time frame; exercises conducted since the latest publication of FM 100-5. Criterion for selection of a particular exercise is based purely on availability of research material. In Europe, these exercises include REFORGER, CRESTED EAGLE/CARBON EDGE, WINTEX-CIMEX, LOGEX, and exercises conducted at the Warrior Preparation Center (WPC). In Korea, exercises include TEAM SPIRIT and ULCHI FOCUS LENS. Analysis also includes two corps level Battle Command and Training Program (BCTP) exercises, one in each theater. Sources include official after action reports published by the Center For Lessons Learned (CALL) and by agencies conducting the exercise.

Several limitations in these sources require *a priori* acknowledgement. Many of these reports are classified because of the real world contingencies around which the exercises are built. Some are "close-hold" because they involve specific units and criticism of specific commanders, often at the general officer level. CALL products do not cover entire exercises - specific topics are usually targeted by design as part of the TRADOC Support Exercise Program.[23] Finally, the absence of evidence in any particular area does not *assume* a lack of application or effort. After action reports often focus on specific "science" issues. Topics involving the "art" often escape the printed report even though much thought and effort may have been applied during the exercise process. With these limitations in mind, I now explore the exercises within the context of the five criteria established.

---

[22] Ibid.

[23] See CALL Evaluation Report Introductions.

Operational Maneuver

> *Operational Maneuver seeks decisive impact on the conduct of a campaign. It attempts to gain advantage of position before battle and to exploit tactical success to achieve operational results.*[24]

Effective maneuver is vital to achieving superior combat power. The movement of "large formations" to "great depths" is often characteristic of operational maneuver but the key is not just scale alone. Focus is on the positional advantage to be gained as a result of the maneuver. This requires the coordination of tactical and logistical activities and anticipation of events well beyond the current battle. Through operational maneuver, commanders gain positional leverage to attack the enemy's center of gravity, either directly or indirectly. Corps are the instruments with which higher commands conduct operational maneuver.[25]

Authors often use the terms movement and maneuver interchangeably. Even our doctrine does not always carefully differentiate the two. Both have meaning at the operational level but they are not interchangeable. Colonel Holder defines maneuver as "tactical movement supported by fires which is conducted to gain advantage over the enemy". Fire and movement, on the other hand, implies one force is fixing the enemy while other forces move. Maneuver concentrates combat power at unexpected times and places to bring fire to bear at points of enemy weakness. These concepts are applicable at the tactical and operational levels.[26]

Movement is a key component of maneuver. As Napoleon saw it, "Marches are war ... Aptitude for war is aptitude

---

[24] FM 100-5, p. 12.

[25] FM 100-5, pp. 12, 185 and FM 100-6 (Coordinating Draft), pp. 3-12 to 3-13.

[26] [Holder], III Corps Maneuver Handbook, pp. 4-15.

for movement."[27] Napoleon was able to gain the advantage of positional leverage over his enemy by moving more quickly than his opponent.[28] Movement advantage is a relative term. To move faster than the enemy, you can increase your own rate of movement or decrease his ability to move. Impeding enemy movement is a major objective of operational fires.[29]

In a more general sense, maneuver is often used to describe a type of doctrine - a method of fighting at the opposite end of the spectrum from attrition. General DePuy describes FM 100-5 as maneuver doctrine but guards against over simplification. "... it is permissible to be against attrition so long as the critic does not spread his anathema over the whole idea of fighting; not only fighting but hard, bloody fighting should that be necessary."[30] Mr. Stephen Cimbala thinks maneuver and attrition are often incorrectly described in the American debate. He defines attrition as firepower plus sustainment; maneuver as penetration plus encirclement. Based on the situation, an experienced commander can achieve success by applying both.[31]

While the above is only a small sample of the continuous debate over what maneuver is and how it should be applied, several points seem clear. Maneuver is a key component of our doctrine. It consists of fire and movement. Movement is a relative term and has meaning only in relation to the enemy's ability to move in relation to friendly forces. Finally, maneuver and attrition are not necessarily contradictory terms. Maneuver is used to gain the advantage of position; to set favorable terms of combat

---

[27]Le Comte Derview, *The Transformations of War*, cited by J.F.C. Fuller, *The Conduct of War, 1789-1961* (New York: Minerva Press, 1968), p. 50.

[28]Robert McQuie, "Battle Outcomes: Casualty Rates As a Measure of Defeat," *Army*, November 1987, pp. 30-34.

[29]Price T. Bingham, LTC, USAF, "NATO Needs a New Air Interdiction Approach," *Armed Forces Journal International*, October 1986, pp. 16-17.

[30]William E. DePuy, General, "Concepts of Operation: The Heart of Command, The Tool of Doctrine," *Army*, November 1984, p. 19.

[31]Stephen J. Cimbala, *Extended Deterrence: The United States and NATO Europe*. Massachusetts/Toronto: D.C. Heath and Company, 1987. p. 99.

power to win what might very well turn out to be an attrition battle.

Reference to operational maneuver is disappointingly absent in most of the exercises analyzed. The two BCTP WARFIGHTER exercises provide the best insights. These are both tactical level exercises but both employ the corps as instruments of operational maneuver. First considered is a heavy corps in Europe.

The European scenario exercises a U.S. heavy corps committed as an army group operational level reserve. The army group commander intentionally allows a salient to develop and thereby encourage the enemy *Front* commander to commit his second echelon forces into the salient. His desired end state is reduction of the salient and the destruction of enemy forces within it. The ways and means included fixing lead enemy forces with the allied corps in place and attacking into the salient with the U.S. heavy corps as the primary defeat mechanism. The corps objective is force oriented: destruction of two second echelon divisions of the second echelon army.[32]

Execution is only partially successful. At the end of the exercise, lead divisions are approximately 50% combat effective and the initiative is lost. OPFOR elements are piecemealed around the corps, still relatively strong, and the corps is attempting to assume a defensive posture, with some difficulty.[33] While some of the problems are attributable to the corps, focus here is with the operational plan of the army group. Most significant is the number of routes allocated to the corps. Restrictive terrain and the presence of the committed allied corps allow only three routes for the entire attacking corps. Colonel

---

[32]Field Exercise Report, *War Fighter XX-X* (SECRET), Center for Army Lessons Learned, Combined Arms Training Activity, Ft Leavenworth, KS, 22 March 1989, p. B-2. Hereafter cited as WFX AAR dtd 22 Mar 89.

[33]WFX AAR dtd 22 Mar 89, p. B-4.

Holder recommends three to four per division and eight per division for attack positions to the line of departure.[34]

The resulting road congestion was inevitable. Refugee congestion, interference between organic combat, combat support, and combat service support units, and attack by chemical weapons and enemy special purpose troops exacerbated the problem.[35] The result was an inability to effectively mass combat power quickly enough to exploit success once the salient was penetrated. Instead, the corps was committed piecemeal, unable to move as quickly as the enemy. Once the enemy realized the focus of the corps effort, he was able to reinforce the salient and out maneuver the attacking Corps. Initiative was lost.[36]

Success or failure should not be viewed in isolation. Other factors such as failure of the deception effort and limited effects of operational fires also detracted from success. Significant here, however, is the apparent failure on the part of the army group staff (in coordination with the corps staff) to fully appreciate the movement requirements of a heavy corps. The application of the "art" of operational maneuver was limited by the "science" of movement.

The Korean scenario provides a different perspective although some of the results are similar. Here we have a corps committed in a mid-intensity Korean environment as part of a combined army. The army is attacking to destroy enemy forces in zone and seize several key terrain objectives. The army commander's intent is for the exercise corps to rupture the first defensive belt and then exploit the penetration deep into the enemy rear. The corps would then defend, blocking the enemy, while adjacent forces

---

[34][Holder], Movement Handbook, p. 51. Also see "Operational Maneuver in Europe."
[35]WFX AAR dtd 22 Mar 89, p. F-4.
[36]WFX AAR dtd 22 Mar 89, pp. I-4 to I-10.

attack to complete destruction from the flank.[37] The Army commander was attempting to gain positional leverage with the exercise corps through operational maneuver.

This scenario differs from the European scenario in several ways. The exercise corps is a mixture of light, motorized, and mechanized infantry forces. The mission is a deliberate attack across a river to penetrate enemy defenses, sever lines of communications, and seize terrain objectives.[38] Yet, similar to the European scenario, difficulty in moving the corps significantly detracts from complete success.

The corps commander's intent was to use the light infantry divisions to penetrate the enemy defensive belt and secure river crossing sites. The motorized and mechanized forces could then exploit the penetrations and seize terrain objectives to sever enemy lines of communication. The light divisions would follow exploitation forces and destroy any enemy forces remaining in zone.[39] Once again, however, the corps was unable to exploit initial success and retain the initiative because of difficulties in moving. First, exploitation forces were committed before a clear penetration was achieved. This resulted in the exploitation forces becoming bogged down in the penetration effort. Attempts to shift the main effort resulted in major time delays due to road congestion on limited lateral routes. Inadequate planning, movement control, and the relative mobility differential between the light and heavy forces compounded the problem. The enemy was allowed time to react with his reserves and the initiative was lost.[40]

---

[37]Field Exercise Report, *War Fighter XX-X* (SECRET), Center for Army Lessons Learned, Combined Arms Training Activity, Ft Leavenworth, KS, November 1989, p. V-4. Hereafter cited as WFX AAR dtd Nov 89.
[38]WFX AAR dtd Nov 89, p. I-1.
[39]WFX AAR dtd Nov 89, p. I-2.
[40]Ibid.

Moving the corps stands out as a common weakness of the two exercises. Problems with synchronizing fires, intelligence, deception efforts, and sustainment also contribute in both cases, yet problems in planning and executing movement appear to be some of the most significant limiters in exploiting tactical success to achieve operational results. If the corps is to be the instrument of operational maneuver, these two exercises demonstrate difficulty in executing current operational maneuver doctrine.

Operational Fires

> *Fires at the operational level are designed to achieve a single operationally significant objective. They have major and possibly decisive implications for campaigns and major operations. Finally, they are planned and synchronized at the operational level of command.*[41]

Operational fires support operational maneuver by limiting the enemy's freedom of action. They are planned from the "top down" and are designed to have a decisive impact on the conduct of the campaign or major operation. They can be air or surface delivered and may include nuclear fires.[42] "In an important sense, operational fires are not fire support at all, but rather a coequal component of the operational scheme."[43] As with operational maneuver, operational fires have a decisive effect at the operational level and help set the preconditions for tactical success. FM 100-6 (Coordinating Draft) lists three general tasks for operational fires:[44]

* *Facilitating maneuver to operational depths by the creation of an exploitable gap in the tactical defense;*

---

[41] TRADOC Pam 11-9, p 4-6.

[42] FM 100-5, pp. 12, 16, and 19 and FM 100-6 (Coordinating Draft), pp. 3-13 to 3-17.

[43] FM 100-6 (Coordinating Draft), p. 3-17.

[44] FM 100-6 (Coordinating Draft), p. 3-14.

* *Isolating the battlefield by the interdiction of uncommitted enemy forces and sustaining support; and*

* *Destroying critical functions and facilities having operational significance.*

Operational fires are closely tied to the deep battle. Major General Raphael J. Hallada uses the term "attack at depth" in fire support context - to disrupt, delay, or destroy enemy forces before they are in direct contact. Yet with the current force structure, our ability to execute is limited. With the exception of the aging Lance missile, the Air Force is the only means available. Increased demand for deep fires and increased aircraft vulnerability to air defense systems create serious problems in our ability to attack in depth.[45]

General Bernard W. Rogers, former Supreme Allied Commander, Europe, had more confidence in current capabilities expressed under the concept of FOFA. Follow-on Forces Attack (FOFA) is related to but separate from AirLand Battle. In is a "sub-concept" developed within NATO to attack follow-on forces deep while operating within the political constraints of crossing borders with ground forces. Components include conventional systems currently available (manned aircraft, missiles, artillery, remotely delivered mines, etc). The intent is to exploit proven technology to enhance NATO's ability to defend within the context of "flexible response" while concurrently reducing the nuclear threshold.[46]

Other authors are not so confident in current capabilities. "The 'how' of attacking deep is vague, primarily because existing systems are inadequate in range,

---

[45]Raphael J. Hallada, Major General, "Fire Support Modernization: A Major Step Toward Deterrence," *Military Review*, August 1989, p. 12-13.

[46]Brenard W. Rogers, General, "Follow-on Forces Attack (FOFA): Myths and Realities," *NATO Review*, December 1984, pp. 1-9.

survivability and lethality."[47] Most proponents of operational fires do not argue the merits of the concepts of either "attack at depth" or FOFA, but rather on capabilities to execute. They contend technology holds major promise in this arena.[48] General DePuy is less supportive. He sees FOFA as a "wholesale approach to a problem from which wholesale means will never be available." Instead he offers a more surgical approach conducted in conjunction with ground maneuver, more limited in design and depth, and more modest in application.[49]

Air support is a critical component of FOFA, deep battle, and operational fires given our current limitations of other conventional means. Nearly all categories of air support could be considered operational fires. Key is whether or not the fires have potential decisive impact on the conduct of the campaign or major operation. Defensive counterair (DCA) targets enemy air over friendly territory and is critical to protecting the force, both air and ground. Offensive counterair (OCA) attacks enemy air assets yet also has significant impact on both air and ground freedom to maneuver. Air interdiction is one of our few conventional means to fight the deep battle. Offensive air support (OAS) (tactical air reconnaissance, close air support, and battlefield air interdiction in NATO) is also a significant aspect of the deep battle (BAI) and FOFA (AI + BAI).[50] Even close air support is an operational fire when used to create an exploitable gap in the tactical defense to facilitate operational maneuver.

For all the potential contributions air support can make to operational fires, manned aircraft are increasingly

---

[47]Frederick A. Tarantino, "A Substitute for NATO's Nuclear Option?" *Military Review*, March 1988, p 26.

[48]For a complete discussion on current and future capabilities, see the August 1989 issue of *Military Review* dedicated to the topic of Fire Support.

[49]DePuy, "Toward a Balanced Doctrine: The Case for Synchronization," p. 25.

[50]James P. Kahan, "Air Support in CENTAG Deep Operations," *Military Review*, August 1989, pp. 65-68.

vulnerable, expensive, and often required to participate in the air superiority battle. There is a long list of emerging technologies that could potentially replace manned aircraft and conserve this limited resource for missions that require its inherent strength of flexibility.[51] Major Roy Griggs offers the Navy's Tomahawk Land Attack Missile - Conventional (TLAM-C) as a prime candidate for deep fires. While not nearly as flexible as manned aircraft or as effective against all targets, it could be very effective against high-value, fixed targets.[52]

A final note on operational fires involves the use of nuclear weapons. While detailed analysis is beyond the scope of this paper, the implications for their use as an operational weapon cannot be ignored. So far, Bernard Brodie's original proposition, that nuclear weapons would never again be used to fight wars but only to deter them, has held true.[53] Yet as long as nuclear weapons remain a critical part of such strategies as NATO's "flexible response," the nuclear shadow remains ever present. The operational commander must, therefore, plan to defend against and exploit friendly use at the operational level once release authority is granted.[54]

Team Spirit provides examples of attempts to apply operational fires and highlights many of the difficult problems involved. Team Spirit 88 is designed around the full spectrum of combined and joint ground, air, unconventional and sea/amphibious operations in a Korean

---

[51]Jonathan Dean, *Watershed in Europe*. Massachusetts / Toranto: Lexington Books, 1987, pp. 61-63. Emerging technologies include improved artillery systems and MLRS, precision guided munitions, cruse missiles, computer aided surveillance and acquisition, drones, conventional modified Lance, and airborne radar, to name a few. See also Technology in warfighting, *Military Review*, March 1988.

[52]Roy A. Griggs, MAJ USAF, "Maritime Strategy on NATO's Central Front," *Military Review*, April, 1988, p. 55-56.

[53]Stephen J. Cimbala, "NATO Strategy and Nuclear Weapons: A Reluctant Embrace," *Parameters*, June 1988, p. 21.

[54]Ibid. pp. 46-48.

scenario. Joint and combined air-ground operations are a specific training objective of the exercise.[55]

In Team Spirit 88, operational fires focus primarily on air assets: Air Force, Navy, and Marine. Most problems discussed are procedural: coordination of cross service air operations by the Air Component Commander. The Air Support Operations Center (ASOC) has difficulty in managing all available assets.[56] Lack of a combined Joint Air Attack Team agreement prevents effective integration of ROK and U.S. aircraft for such missions.[57] Frequency management and distribution problems make mission planning and execution more difficult.[58] The Air Tasking Order (ATO) distribution process creates problems getting the "total package' to the air mission commander.[59]

While these problems are all procedural in nature, implications seem clear. If the mechanics of integrating joint and combined air operations are not solved, the "art" of applying operational fires is limited. To be planned from the "top down," to have a decisive impact on the campaign or major operation, the mechanics of planning and execution must be in place and workable. Exercises such as Team Spirt go a long way in both identifying and resolving many of these procedural issues.

All other exercises studied either focus on tactical fire support or do not address the subject at all. In the BCTP exercises, the corps' fought their own battles. There is no evidence of operational fires applied by either the army group or the combined field army to facilitate operational maneuver, isolate the battlefield, or destroy significant facilities that would either help set the

[55]Evaluation Report, *TEAM SPIRIT, 1988*. HQ, Commander in Chief, U.S. Pacific Command, Evaluation Report (Secret RELROK), dated 10 June 1988, pp. 1-1 to 1-2.
[56]Ibid. p 2-19.
[57]Ibid. p. 2-17.
[58]Ibid. p. 2-24.
[59]Ibid. p. 2-22.

conditions or exploit tactical success. The REFORGER exercises focus on tactical fire support at the corps level and below. Operational fires were not a specific evaluation target for other operational exercises and are therefore difficult to evaluate from this perspective.

Tentative conclusions are difficult. Team Spirit 88 demonstrates attempts to plan operational fires from the "top down" and the inherent difficulties in coordinating such efforts. There is no evidence, however, of assets focused to cause a "decisive impact" on the conduct of the campaign or major operation. Reports are void of any attempts to "fire hose" assets or create an air *schwerpunkt*. Operational fires are either not being fully played in the exercises or if they are, methods of application escape inclusion in the final after action reports.

Operational Intelligence

> *Although intelligence at the operational level of war is more critical than at the tactical level, it is also more difficult to achieve. Once acquired, it is more dangerous to rely upon.*[60]

FM 100-5 differentiates operational intelligence from tactical intelligence primarily in terms of scope, relative to both time (well into the future) and space (ground, air and sea). The enemy will also most likely be operating in a joint and combined environment. Probing the mind of the enemy commander is important at the operational level and analysis keys on determining the enemy's center of gravity.[61] Integrating national and allied intelligence efforts within a combined theater and rapidly sharing that information within the combined staff and to subordinate elements is also key at the operational level.[62] FM 100-6 (Coordinating Draft) adds emphasis on risk and vulnerability to enemy deception. Finally, it introduces five operational

[60] FM 100-6 (Coordinating Draft), p. 3-8.
[61] FM 100-5, pp. 29-30

intelligence and electronic warfare (IEW) tasks: situation development, target development, security, deception, and indications and warning.[63] While both manuals describe what operational intelligence should do, they lack percise definition of what operational intelligence is.

A large measure of our ability to collect and exploit operational intelligence is based on technology - reconnaissance, intelligence, surveillance and target acquisition (RISTA) systems networked with automated tactical data systems. The systems must be capable of acquiring, locating, and swiftly processing targets close and deep for attack if we are to execute our doctrine.[64] At corps level, current systems include Improved Guardrail V (COMINT), Quicklook II (ELINT), and side-looking airborne radar (SLAR) (IMINT). The Corps' long-range surveillance unit (LRSU) provides human intelligence. Above the corps, TENCAP (national) and the Tactical Reconnaissance System (TRS) normally support the theater commander.[65]

Current systems, however, do not process targets quickly enough nor with enough location accuracy and resolution for attack as required by AirLand Battle. National and theater systems are often too slow. All require a man in the loop and are therefore slow and cumbersome. Some platforms are vulnerable to interdiction. Future systems such as Guardrail Common Sensor (GRCS), the Joint Attack Radar System (JSTARS), and the Air Force's Advanced Tactical Reconnaissance System hold promise but are yet to be proven and are always subject to funding constraints.[66]

---

[62]FM 100-5, p. 166

[63]FM 100-6 (Coordinating Draft). pp. 3-11 to 3-12.

[64]Clyde J. Sincere, "Target Acquisition for the Deep Battle," *Military Review*, August 1989, p. 23.

[65]Ibid., p. 25-27.

[66]Ibid., p. 26-28.

Major General (Retired) Edward B. Atkeson takes a rather pessimistic view of our current operational intelligence capabilities in a combined environment such as NATO. Since intelligence is a national responsibility, coordinating collection above the corps level is difficult. The U.S. corps ("a giant among midgets") is the interface between national systems and the needs of the tactical commanders. Operational level commanders must rely on information from higher and lower echelons. Since the operational commander does not have directing authority over national collection systems he can only request information. The result is a disjointed effort with high potential for each national corps developing its own intelligence picture with little focus at the operational level. The current process is slow and cumbersome and "would appear to be a formula for disaster."[67]

Major General Atkeson does offer a solution. He recommends a small intelligence-handling detachment be assigned to each operational-level headquarters. This detachment would be capable of passing high-quality, time-sensitive information as relevant to the host headquarters. "If we are serious about the operational level of war, we should be doing much more to integrate the unique US intelligence capabilities with the ACE [Allied Command Europe] structure..."[68]

Technology may provide solutions to many of our current operational intelligence problems, but we must assume similar capabilities of a sophisticated enemy. As we try to determine not only what he is doing, but also what he *intends* do next, so too are his efforts focused. In this Clausewitzian wrestling match, both sides are vulnerable to deception.

---

[67] Atkeson, pp. 33-35.
[68] Ibid., p. 35.

Analyzing operational intelligence in these exercises is perhaps the most difficult of the five operational functions. Most sources are classified and focus largely on technical means. They also predominantly orient at the tactical level. Even so, there are indications of operational intelligence doctrine being applied. These indications demonstrate attempts to exploit considerable capabilities and some of the difficulties in transforming these capabilities into combat multipliers at the operational level.

Evident in the European WARFIGHTER exercise is the element of time. It can take a corps a week or more to plan, organize and execute a corps move from its initial assembly areas into battle. Several days are required just to move from tactical assembly areas to the line of departure.[69] This exercise presumes the army group commander is able to anticipate enemy action well enough in advance to execute this move. Once the corps is moving, it is difficult to change its mission. Hence, the exercise assumes a certain level of operational intelligence capability as a vehicle to exercise the corps.

During the exercise itself, timeliness of operational intelligence also impacts on corps internal operations, especially the corps deep battle. The corps repeatedly misses its deep battle target for lack of ability to synchronize the collection and targeting process.[70] Much of this difficulty stems from tactical intelligence problems internal to the corps. Others, however, have operational significance. There are problems exchanging intelligence summaries between the corps and army group, scheduling surveillance platforms, and coordinating corps long range surveillance units between the forward allied corps and army group. Assets available only to the theater CINC are

---

[69] Curry, p. 15.

[70] WFX AAR dtd 22 Mar 89, p. B-4.

withdrawn at a critical point in the battle when imagery is the only means available to the corps and army group for the deep battle targeting. The corps realized this impact too late to affect the decision. Shortfalls in mission management between the corps and EAC assets are a continuous problem.[71] While the exercise report focuses attention on the problems this presented to the corps, it also has implications of difficulty for the army group and theater CINC who are also dependent upon the corps to feed them information.

REFORGER 87 reflects the mechanical difficulty in integrating operational intelligence. In this exercise, communication links between corps and EAC worked well, but they were totally dependent upon in place AUTODIN circuits. Such a dependence may be permissible in a mature theater such as Europe, but capabilities are questionable in a less mature environment.[72] Communications also have a direct effect on report timeliness for the Special Forces Land Strategic Reconnaissance Teams (LSR) in support of the Strategic Intelligence Target Acquisition (SICTA) mission. From the time of sighting, SF LSR teams took between 2-18 hours to report, too long in many cases for users to exploit the information. Recommended solutions include expansion of doctrine on the integration of strategic land reconnaissance forces and improvements in communications equipment for these forces.[73] These issues are also addressed in Team Spirit 88.[74]

Another communications related item that affects operational intelligence is joint frequency management. Recall that in Team Spirit 88 this same issue caused an adverse impact on operational fires. General Maxwell R.

---

[71]WFX AAR dtd 22 Mar 89, p. E-5.

[72]After Action Report: *FTX REFORGER, 87*, Combined Arms Training Activity, Ft Leavenworth, KS, 1987, p. E-2.

[73]Ibid., pp. E-2 to E-6.

[74]Team Spirit AAR, p. 2-53.

Thurman, then commander TRADOC, cites a similar problem related to jamming in REFORGER 87. Lack of doctrine to deconflict air and ground based capabilities is compounded by lack of exercise play in this arena. As a result, the full extent of this problem is not yet fully realized.[75] This issue impacts not only on capabilities to ensure unity of effort with limited jamming capabilities, but also on our ability to anticipate the impact on friendly forces.

Team Spirit 88 expands on the difficulty in conducting combined intelligence operations. In Korea, a Combined All-Source Intelligence Center (CASIC) exists at each Army level. However, no doctrinal procedures exist and therefore each one is different. Each CASIC has its own internal configuration and equipment is not standard. This has an adverse impact on tasking, collecting, processing, producing, and disseminating operational intelligence between the armies and the combined army headquarters.[76] Other deficiencies noted are a lack of ROKA Armies deep look capability and difficulties in exchanging intelligence between services. Doctrine for deep battle IPB above corps level is also considered inadequate. From a material standpoint, the All-Source Analysis System (ASAS) holds promise for coping with the ever increasing volume, complexity, and variety of intelligence data. There are concerns, however, that ASAS be compatible with existing communications, automation, fire support, and Air Force systems.[77]

In all these exercises, there is little evidence of probing the mind of the enemy commander, determining the enemy's center of gravity, or risk assessment. Nor is there any mention of analyzing friendly unit vulnerability to enemy deception as discussed in our doctrine. Instead,

---

[75]REFORGER 87 AAR, pp. E-12, E-12-1.
[76]Team Spirit AAR, p. 2-66.
[77]Ibid. pp. 2-70 and 2-71.

focus is on the tools - the means available. Yet, the simple lack of evidence is inconclusive. The thought process or application of doctrine may have existed during the exercise, there is just no evidence to support it. One thing is clear. Coordinating and integrating the tools available is difficult. Much work remains in the areas of doctrine, training and, in some cases, force structure and equipment development. If these tools are not fully capable of providing the operational intelligence we anticipate and often assume, the operational commander may be taking more risk in his decision making process than he realizes.

Operational Deception

> *All warfare is based on deception. Therefore, when capable, feign incapacity; when active, inactivity. When near, make it appear that you are far away; when far away, that you are near. Offer the enemy a bait to lure him; feign disorder and strike him.*[78]

As with the previous operational functions, FM 100-5 reference to operational deception is general in nature.[79] FM 100-6 (Coordinating Draft) differentiates tactical and operational deception based on the differences in executing OPSEC and manipulating enemy intelligence. "Deception at the operational level seeks to facilitate the prosecution of a major operation or campaign by manipulating the enemy's perceptions and expectations."[80] It groups the differences under target, timing, scale, plausibility, and consistency. Target refers to the level of the commander with the

---

[78]Sun Tzu, *The Art of War,* translated by Samual B. Griffith. New York: Oxford University Press, 1963, p. 66.

[79]FM 100-5. Deception first appears as one of a list of actions to protect the force. [p. 13] It is also included as a "bullet" under activities typically conducted as part of deep operations. [p. 20] The AirLand Battle Imperatives section makes another reference in conjunction with terrain, weather, and OPSEC. [p. 24] The introduction to tactical deception stresses the importance of operational deception and the link to the tactical plan, but does not elaborate. [p. 53] The manual makes additional references in the defense and offense chapters as well, but no where is operational deception defined or explained.

[80]FM 100-6 (Coordinating Draft), p. 3-19.

authority to react to the deception. Timing affects both friendly and enemy future operations. Scope influences more than one enemy echelon of command and must link strategic and tactical efforts within the time and capability of the enemy's collection capabilities. Plausibility at the operational level differs not only in selling the original story, but more significantly, selling it over an increased period of time. Finally, operational deception must be "woven into the fabric of the campaign or operation plan" and avoid conflicting evidence by being consistent.[81]

> *... operational deception offers a fertile scope for imagination and boldness. More than any other operational activity, deception offers the opportunity to use the enemy's own actions to defeat him. While operational deception is difficult to mount, such an effort, if successful, will often be decisive.*[82]

Going into WW II, the U.S. Army was reluctant to acknowledge deception as a proper part of military doctrine. As reluctant students of the British, we learned to capitalize on deception as a valuable combat multiplier. Operation *Fortitude*, which deceived the Germans into thinking Normandy was only a feint, is probably the most classic example of success. Yet even with General Eisenhower's admonition to "keep alive the arts of ... cover and deception,"[83] the art was lost after WW II. The fascination with firepower, born in Korea and further amplified in Vietnam, the acceptance of atomic weapons, and an American bias all contributed to erosion of the art.[84]

There appears to be a resurrection in the art of deception, at least in our schools and in our doctrine.

---

[81]FM 100-6 (Coordinating Draft), pp. 3-21 to 3-23. Also see Center for Army Lessons Learned BULLETIN 3-88, dtd July 1988 for an excellent discussion on deception doctrine.

[82]FM 100-6 (Coordinating Draft), p. 3-23.

[83]Dwight D. Eisenhower, *Papers of Dwight David Eisenhower: The Chief of Staff*, edited by Louis Galambas, John Hopkins University Press, Baltimore, Maryland, 1979, Volume IX, p. 1,763.

[84]Thomas A. Savoie, "Are We Deceiving Ourselves?" *Military Review*, March, 1987, pp. 38-39.

Fascination with Soviet *Maskirovka* started reemphasis first at the tactical level, then evolved into our latest operational doctrine. FM 90-2, *Tactical Deception*, for example, has been totally rewritten to include an entire chapter on operational deception and another to include deception in joint, combined, and contingency operations. Are we reclaiming lost ground or are we deceiving ourselves as one author claims?[85]

Lieutenant Colonel Robert F. Brown opines that this trend of increased emphasis will continue. A Battlefield Deception Office was organized in 1986 with the specific charter of developing and publishing concepts, doctrine, training programs and force recommendations. Since that time, FM 90-2, *Battlefield Deception*, has been republished. Training at the service schools has increased. Deception planning cells have been added to the force structure and material development for deception operations is being tested and fielded.[86] The process of linking doctrinal voids found in exercises back into the doctrine writing process also seems to be working as evidenced in FMs 90-2 and 100-6 (Coordinating Draft). Yet, as the examples below will show, we still have significant progress to make before we can consider ourselves masters in the art of deception.

The two WARFIGHTER exercises are not encouraging. Both corps attempt tactical level deception operations; neither is effective. In the European scenario, a misunderstanding of the deception intent results in combat support and combat service support movement working at cross purposes to the deception effort.[87] In the Korean exercise, attempts to disguise the main effort are not updated when the main effort shifts. Cross purpose efforts again result. From

---

[85]Ibid., pp. 37-45.

[86]Robert F. Brown, "MR Update: Deception," *Military Review*, March 1987, pp. 46-47. Note: In 1989, proponency for deception returned to the Combined Arms Center (CAC) at Fort Leavenworth.

[87]WFX AAR dtd 22 Mar 89 AAR, p. 8-8.

the operational perspective, neither deception effort is tied to an operational deception plan.[88] Hence, the critical link between strategic and tactical deception efforts is totally missing.

WINTEX-CIMEX 87 reemphasizes the need for joint deception doctrine. The complementary and integrated efforts of all services involved are essential if the deception effort is to be successful. As with the other operational elements, synchronization with all other planning cycles is key.[89] The new FM 90-2 and a pamphlet titled Joint Deception Operations are the most recent attempts to address these issues.[90]

Ulchi Focus Lens 87 (UFL87) focuses specifically on deception operations at corps and army level. In this Korean/Pacific theater exercise, deception operations are planned at theater level and executed by theater through corps. Tactical deception is planned at army and executed by the maneuvering forces. Major deficiencies noted include a lack of training at joint/combined deception staff positions and a need for a deception element at the field army headquarters.[91]

Specific observations call for a planning guide that lays out enemy intelligence gathering systems and resources required for force portrayal for specific deception tasks.[92] Sun Tzu's dictum "know the enemy and know yourself"[93] has specific relevancy to this task. To know the enemy, you must know his intelligence collection capabilities. These capabilities are enemy and theater specific. They must

---

[88]WFX AAR dtd 22 Mar 89 cites this omission specifically, p. B-8. The omission is inferred by lack of information relating to an Army deception plan in WFX AAR dtd Nov 89.
[89]After Action Report: *WINTEX-CIMEX 87*, Combined Arms Training Activity, Ft Leavenworth, KS, 23 March 1987, p. I-3.
[90]Ibid., p. B-4-a.
[91]After Action Report: *ULCHI FOCUS LENS 87 FTX*, Combined Arms Training Activity, Ft Leavenworth, KS, 19 February 1988, p. I-2.
[92]Ibid., p. B-2
[93]Sun Tzu, p. 84.

include language, cultural, personality, and security peculiarities[94] as well as his technical acquisition capabilities.

Knowing yourself can be extremely complex at the joint/combined operational level. The absence of detailed, specific unit profiles of friendly forces hinders the ability of deception planners to execute a real wartime deception. Profiles should include physical, thermal, infrared, signal emissions, and electronic emissions and must be developed during peacetime. Units do not currently have the organic capability to develop these profiles and external support is difficult to obtain.[95] Yet, without "knowing yourself," how can we expect to deceive the enemy?

Recommended solutions include additional training, especially for joint and combined staff positions, expansion of deception staffs, joint programs to develop unit profiles, and continued development of operational concepts, doctrine, training, force design, and material requirements. One such effort was the TRADOC Concept Review Board, hosted by MG T. C. Foley in October 1987 in response to the Chief of Staff of the Army's tasking.[96] While continued emphasis and progress in this important area is evident, it is also apparent much work remains.

Operational Sustainment

> *Campaigns will often be limited in their design and execution by the support structure and resources of a theater of war. Almost as commonly, the center of gravity of one or both combatants will be found in their support structures, and in those cases major operations or even entire campaigns may be mounted to defend or destroy those structures. Operational maneuver and the exploitation of tactical success will*

---

[94] Ulchi Focus Lens 87 AAR, p. B-3.
[95] Ulchi Focus Lens 87 AAR, p. B-6.
[96] Ulchi Focus Lens 87 AAR, p. B-6-a-2.

often depend critically on the adequacy of a force's sustainment.[97]

Operational sustainment extends from the theater sustaining bases to forward tactical combat service support units and facilities. *Planning for operational sustainment* includes critical decisions concerning the interface of combat and sustainment activities. These include lines of support, staging, altering lines of communication, sustainment priorities, and force expansion.[98] Effective planning avoids reaching an operational culminating point prematurely by staging support forward and allowing the force to maintain an operating tempo that outpaces the enemy. Included in the planning process is a comparison between requirements and capabilities to determine the art of the possible.[99]

"A prince or general," wrote Clausewitz, "can best demonstrate his genius by managing a campaign exactly to suit his objectives and resources, doing neither too much or too little."[100] Similar thoughts can be expressed in terms of ends, ways and means. The ends are the objectives. The ways are the methods of the campaign plan. The means are largely affected by logistics.[101] Sun Tzu advises - "With many calculations, one can win; with few one cannot. How much less chance of victory has one who makes none at all!"[102]

The art versus science debate is as applicable to logistics as any of the military disciplines and, as with the others, the two are inseparable. "The art of logistics may easily get lost in the often bewildering plethora of numbers so necessary to modern logistics planning."[103] But

---

[97] FM 100-5, p. 59.
[98] FM 100-5, pp. 65-71.
[99] FM 100-6 (Coordinating Draft), pp. 3-17 to 3-19.
[100] Clausewitz, p. 177.
[101] Newell, "Logistical Art," p 32.
[102] Sun Tzu, p. 71.
[103] Newell, "Logistical Art," p 33.

as Martin van Creveld points out, numbers alone produce an incomplete picture. The science alone is not enough. It does not account for everything in war.[104] The gift of artistic genius is as applicable to logistics as it is to war in general. Logistical art and operational art are closely related. As the operational commander attempts to balance ends, ways and means, logistics will often constrain him in the ways he attempts to reach the desired strategic objective - the ends.[105] Hence, logistical art is an integral part of operational art.

> *The full potential of AirLand Battle doctrine can only be realized when we are able to create necessary combat power at crucial times and places on the battlefield. Sustainment of that combat power is the art and science of the logistician.*[106]

General Carl E. Vuono stresses the importance of anticipation in operational sustainment. "It is a balance of art and science that seeks not so much to predict the flow of the battle as to discern relative times, locations, and natures of the decisive points within the context of the entire course of operations and campaigns. Sustainment operations both influence and are, in turn, influenced by operational planning."[107] The science provides the parameters of the "doable." The art "allows us to expand the envelope of feasibility to its fullest extent and to both support execution and identify opportunity."[108] The primary purpose of anticipation is not to support the plan but to help form a supportable plan. General Vuono also stresses the importance of realistic exercises in sustaining combat power as a starting point to making informed decisions regarding future force structure. Finally, he concludes that sustainment is not solely a logistics issue.

---

[104]Martin van Creveld, *Supplying War: Logistics from Wallenstein to Patton*, Cambridge: Cambridge University Press, 1978, p. 236.
[105]Newell, "Logistical Art," p. 34.
[106]General Carl E. Vuono, "Sustaining Combat Power," *Army Logistician*, July - August, 1988, p. 6.
[107]Ibid., p. 3.
[108]Ibid., p. 3.

"It is an essential and critical part of the operational art."[109]

Colonel John F. Meehan III, director of Theater Operations at the US Army War College, also stresses the importance of logistics at the operational level. "To a large degree, logistics defines operations ... A campaign plan that cannot be logistically supported is not a plan at all, but simply an expression of fanciful wishes."[110] Yet, while there is general agreement on the importance of operational sustainment, there is less support for the adequacy of our current doctrine in this vital area. A large segment of the doctrinal criticism focuses at the joint and combined nature of operational level warfighting. Some claim current echelon above corps (EAC) support doctrine was written in a vacuum without acknowledging joint and combined requirements. This vacuum cannot be filled by the Army alone, but must be addressed in the broader context of joint and combined operations.[111] With these doctrinal concepts in mind, let us now examine recent exercises involving the application of operational sustainment.

In WINTEX-CIMEX 89, the TRADOC Combined Arms Assessment Team (CAAT) concentrated on six areas of interest: Rear Operations, Reconstitution, Logistical Support, Command and Control, Intelligence, and Personnel Support.[112] All six of these interest areas have implications for operational sustainment. Highlights of lessons learned from this joint and combined NATO exercise are outlined below.

---

[109] Ibid., p. 5.

[110] Meehan, "The Operational Trilogy," *Parameters*, Autumn 1986, p. 16.

[111] William R. Fast, "Operational Level Support in Search of Doctrine," *Military Review*, February 1988, pp. 46-53. Also see Colonel John D. Stucky, "Echelons Above Corps," *Parameters*, December, 1983, p 47.

[112] After Action Report: *WINTEX-CIMEX 89*, Combined Arms Training Activity, Ft Leavenworth, KS, 16 August 1989, executive summary.

Rear Operations sustainment missions above the corps level are not addressed adequately in current doctrine. These include reception and staging, Noncombatant Evacuation Operations (NEO), and battlefield sustainment. Doctrine concerning sustainment, movement management, security operations, and terrain management is also judged deficient. Communications among CSS rear area/base clusters is either sparse or nonexistent. NBC Wartime Reporting System (WRS) implementation and execution often fail to meet required standards.[113]

Numerous problems are sited regarding reconstitution operations. Theater War Reserve Stocks (TWRS) do not fully match equipment on hand in deployed units, causing training, supply, and maintenance problems when TWRS are issued (e.g. M1 vs M60; M2 vs M113; etc). There are inadequate active duty graves registration personnel to support reconstitution operations until reserve component GRREG arrive in theater. Decontamination support is similarly limited. Virtually all of the planning for reconstitution focuses on combat units; insufficient attention is paid to reconstituting combat service support units. The integration of personnel accounting, strength reporting, and management is done on an ad hoc basis at the corps/EAC level. Communications requirements remain undefined; doctrine and communications equipment are inadequate to support reconstitution operations. Current publications (TRADOC Pam 525-51 and CGSOC Student Text 63-1) are the only documents that begin to address the issues and are inadequate.[114]

In the area of logistical support, one problem noted is insufficient staff officer training at the 04/05 level. These officers lack adequate comprehension of the relationships between TAACOM/ASG sustainment operations and AirLand Battle doctrine. Graves registration is again sited

---

[113]WINTEX-CIMEX 89 AAR, para 3. Rear Operations.
[114]WINTEX-CIMEX 89 AAR, CALL issue # 043.

as a problem area. Capabilities are inadequate because of anticipated delays for the arrival of reserve component personnel and inadequate planning for US forces operating in allied sectors.[115]

Sustainment issues relating to Command and Control, Intelligence, and Personnel Support focus primarily on communication links. Inadequate communications for counterintelligence teams, for example, delays information flow to the Rear Operations Intelligence Coordination Center (ROICC). Tracking inbound personnel by MOS and grade is not possible for lack of adequate automation system interfaces.[116]

The Crested Eagle/Carbon Edge 86 after action report focuses primarily on doctrinal assessment and is similarly critical. The report highlights problems in Weapons System Replacement Operations and the intensive management of combat support and combat service support systems.[117] It reiterates signal doctrine, assets, and interface problems. Lack of doctrine for rear area operations above the corps level also receives additional emphasis.[118] Ulchi Focus Lens 87 cites both the responsibilities of the operational commander in rear operations and a failure to address unique requirements of the Korean theater as doctrinal voids.[119] Team Spirit 88 references a lack of cooperation between services to develop and use common CSS equipment such as laundry, bath, and mess. These facilities exist only in limited quantities and are therefore difficult to support with repair parts and there is little redundancy.[120]

---

[115]WINTEX-CIMEX 89 AAR, para 2.
[116]WINTEX-CIMEX 89 AAR, para 4-6.
[117]After Action Report: *USAREUR/CENTAG Crested Eagle/Carbon Edge '86 CPX*, Combined Arms Training Activity, Ft Leavenworth, KS, 18 July 1986., p. I-4.
[118]Crested Eagle/Carbon Edge 86 AAR, p. II-3.
[119]Ulchi Focus Lens AAR, Annex A.
[120]Team Spirit 88, p. 2-74.

Although the European WARFIGHTER exercise is a tactical level exercise, several observations in the area of logistics have operational significance. Because the corps was attacking through the rear area of several allied corps, rear area operations were especially difficult for all concerned. Security, area damage control, and terrain management were culled out as particular areas of difficulty for the exercise corps. Movement control was a problem as well.[121] Operations of such complexity require army group involvement and the capability to deconflict these issues. Failure to do so will impede the employment of the corps and have operational impact.

LOGEX 88 is the forty-first in a series of logistics training exercises sponsored by the Department of the Army's Deputy Chief of Staff for Logistics. Objectives include training staffs within joint and combined environments, stressing the importance of interdependence among the military services and accommodating emerging concepts. It is a NATO scenario and focuses at the theater army area command (TAACOM) and corps support command (COSCOM) organizations.[122]

This logistics focused exercise provides several lessons learned in operational sustainment. Army support to the Air Force for class I, bulk class III, common user class V, and line haul support needs articulation and practice. Similar requirements to support the Marine Corps are surfaced. More exercise time is needed to practice planning and executing forward support in coordination with the scheme of maneuver. Current reconstitution concepts of brigade level organizations are beyond the capabilities of the COSCOM requiring TAACOM augmentation. Host nation

---

[121]WFX AAR dtd 22 Mar 89, pp. B-11 & K-6.

[122]Exercise Directors Final Report: *LOGEX 88*, U.S. Army Logistics Center, Ft. Lee, VA, 1 December 1988, pp. iii to iv.

support procedures work but require continued training. Replacement operations require delineation and practice.[123]

Of particular note is units failing to train as organized under CAPSTONE traces. CAPSTONE participation in LOGEX 88 was low for COSCOM and TAACOM units.[124] As previously noted, some sustainment functions are almost totally dependent upon CAPSTONE unit proficiency once they arrive in theater, e.g. GRREG and decontamination units. (Note: In the European WARFIGHTER exercise, the exercise corps alone sustained 11,000 casualties by D+5.)[125] If these units do not train and participate in such exercises, what is our degree of confidence in these units' capability?

Notably absent from all the exercises is any discussion regarding lines of support, staging, altering lines of communication, sustainment priorities, or force expansion as discussed in FM 100-5. Nor is there any mention of concepts such as culminating points, maintaining operating tempo, or considerations during planning to determine the art of the possible. These concepts may have been an integral part of the planning process between the logistician, the commander, and the rest of the staff, but there is no evidence to support it. Instead, focus is on the mechanics or the science of operational sustainment, not the art. While the science component is certainly critical, it is only part of the whole.

Synchronization – The Key

> *Synchronization is the arrangement of battlefield activities in time, space, and purpose to produce maximum relative combat power at the decisive point ... Synchronization ... takes place first in the mind of the commander and then in the actual*

---

[123] Ibid., pp. v to vi.
[124] Ibid., p. vi.
[125] WFX AAR dtd 22 Mar 89, p. K-6.

planning and coordination of movements, fires, and supporting activities.[126]

It is convenient to separate each of the operational functions for the purpose of academic discussion. However, synchronization of these functional areas is the real key to generating combat power. Synchronization includes concentration but it is not limited to physical concentration. General DePuy defines two methods: concentration of forces in space via maneuver and concentration of actions in time via synchronization.[127]

Air interdiction and ground maneuver must be synchronized so that each complements and reinforces the other.[128] Fires must be closely integrated in both as previously discussed. Intelligence is key to all to detect, identify, prioritize, and strike. Being at the right place at the right time is meaningless unless munitions complete the job.[129] Deception can and should be closely synchronized with the other four elements. Hence, we may discuss these functions separately and may even plan them as separate collateral operations,[130] but even if these operations are separated in time and space, synchronization is key to ensure their combined *consequences* are felt at the decisive time and place.[131]

IV. IMPLICATIONS

Training at the operational level presents a significant challenge. Colonel L.D. Holder again provides insight to the magnitude of the problem and provides recommended solutions. In addition to improving the focus

---

[126]FM 100-5, p. 17.

[127]DePuy, "Toward a Balanced Doctrine," p. 19.

[128]Bingham, "Ground Maneuver and Air Interdiction in the Operational Art," p. 17.

[129]Benjamin S. Lambeth, "Conventional Forces for NATO," Santa Monica, CA: The RAND Corporation, Febuary 1987, pp. 14 21.

[130]For a discussion of collateral operations, see DePuy, "For the Joint Specialist: Five Steep Hills to Climb," *Parameters*, September 1989, p 10.

[131]FM 100-5, p. 17.

of education and individual training, he recommends exercise expansion to specifically include operational level headquarters. His most ambitious solution would recreate the Louisiana and Tennessee maneuvers of the 1940's through a combination of CPXs that could last for months. Other solutions include expanding existing exercises, such as REFORGER, which "must be played out in a maneuver box that hardly challenges divisions." By expanding the exercise with a combination of CPXs that would proceed, parallel, and outlast the FTX, corps and higher echelons could be much more realistically challenged.[132]

Reintroducing the Louisiana and Tennessee maneuvers, even in a CPX mode, may be too costly in time and other resources. Simulations, on the other hand, have tremendous potential and are being pursued. ACE 89 is one example. While after action reports are not yet available for analysis, General Galvin, SACEUR, is optimistic. ACE 89 is intended as a laboratory for doctrine, C3I, procedures, and for theater wide integrated operations. It is designed to include all of Allied Command Europe simulating air, ground, and sea operations across the whole command from Norway to the Mediterranean. It is designed to help senior commanders understand risk, increase their ability to manage large formations, and appreciate fellow senior commanders mission challenges. General Galvin's training philosophy for CPXs is that experience and introspection combine to enhance competence. Computer simulation has high potential as one of the few affordable means to gain this experience and introspection.[133]

---

[132]Holder, "Training for the Operational Level", pp. 8-11.

[133]Galvin, "ACE 89: A Work-out for NATO's Commanders," *International Defense Review*, October, 1989, pp. 1323-1324. Commands intended for inclusion in the exercise are the Supreme Headquarters, Allied Powers Europe, Allied Forces Central Europe, Allied Air Forces Central Europe, Central Army Group and Northern Army Group, 2nd and 4th Allied Tactical Air Forces, and the eight corps in the central region as well as III Corps in the US and response cells representing Allied Forces Northern Europe. This exercise was conducted at the simulation center based at Eisiedlerhof Air Station in West Germany.

Another example of using simulations to enhance operational level training was attempted during the 1990 REFORGER exercise CENTURION SHIELD 90. This exercise combined the FTX *modus operandi* of past REFORGERs with CPXs run through the Warrior Preparation Center simulation facility. This allowed notional units up to army group size to exercise in parallel with the division level FTX/CFX.[134] As with ACE 90, final reports were not yet available at the time of this writing. Even so, the level of effort being expended on simulations to enhance training at the operational level is apparent.

Several factors tend to constrain exercises at the operational level. Since operational level warfighting most often includes joint and combined forces and usually involves large units, resource commitment is proportionately significant in time, money, and people. Exercises such as REFORGER, involving actual employment of troops, tend to focus at the tactical level, are limited in time and space, are very expensive, and provide little exercise to operational level headquarters.

Simulations are much more cost effective but also require a significant commitment. The exercise mechanism itself requires a high degree of sophistication to realistically portray and play opposing forces. These systems are expensive. Participating headquarters require a significant commitment of time, not just for assistant staff officers, but for primary staff officers and general officers. Simulations also have drawbacks. They are sensitive to assumptions made in the model and can provide unrealistic results. Capturing the "human dimension" is difficult. Air models tend to focus on CAS and ignore the counter-maneuver aspects which historically are more

---

Also see General Galvin's article "Getting the Right Mix of Training," in the 23 September 1989 issue of *Jane's Defence Weekly*.

[134]USAREUR Exercise Division briefing slides titled CENTURION SHIELD 90, provided by CPT Mike Thompson, CATA.

important. General officers and senior staff officers have many demands for their time and are often distracted from full-time participation. Yet, their participation is key. Their own opportunity to practice their war time function is rare and exercise value diminishes significantly in their absence.[135] We also must constantly guard against the tendency to focus at the tactical level where most are more comfortable.[136] The length of the exercise itself further compounds the time commitment factor, as major operations and campaigns usually involve weeks or months of fighting - difficult to capture in a typical five to seven day exercise. Finally, simulations can fail to realistically capture the "fog and friction" encountered employing actual units and systems.

Perhaps the most significant implication that will affect the importance of operational level training is the anticipated reduction in the size of the force and the size of our forward deployed forces. Excellence at the operational level becomes even more essential. With fewer forces to defend, the need for operational mobility increases while the margin for error in command and control goes down. Interdicting second operational and strategic echelons through operational fires becomes even more essential with fewer forces to hold at the FEBA. Effective integration all three dimensions - air, ground, and sea, - becomes even more essential as each diminished asset becomes more precious. Warning times may increase, but this could be a disadvantage if we do not react correctly or quickly enough.[137]

---

[135]Paul K. Davis, "Role of Uncertainty, in Assessing the NATO-PACT Central-Region Balance," *The RAND Corporation*, Santa Monica, CA, April 1988." p. 29.

[136]William J. Bolt & David Jablowsky, "Tactics and the Operational Level of War," *Military Review*, February 1987,p. 15.

[137]Galvin, unpublished briefing notes. Undated notes used by General Galvin in a public address and by LTC McDonough in a briefing at the School of Advanced Military Studies on 16 Febuary 1990.

V. CONCLUSIONS AND SUMMARY

Several trends are apparent. In terms of doctrine, FM 100-5 made a giant leap in filling a doctrinal void in the operational level of war that the Army (and the other armed services) lost following WW II. This manual lays the foundation for supporting army doctrine. Next, manuals such as FM 100-6 (Coordinating Draft)/FM 100-7 are making major strides in expanding this doctrine specifically at the operational level. Finally, it is apparent that we still have a way to go. Most contemporary authors argue not with the basic concepts but rather to expand these concepts into more meaningful and more useful doctrine.

But let us not forget what doctrine is or what it should be. Doctrine is officially approved teaching that has been shown to work by experience. It evolves from concepts proven in practice.[138] Is doctrine evolving from practice or is it purely an academic debate? Are we practicing what we preach? The exercises analyzed provide significant insights. Most obvious is the difficulty in mastering the "science" aspect of operational warfighting. It receives the preponderance of focus in most after action reports in search of remedies. The mechanics of planning and executing operational maneuver; coordinating and targeting operational fires; collecting, digesting, and disseminating operational intelligence; planning and integrating effective deception measures; and adequately sustaining such a force requires a level of training and experience at the operational staff level that is difficult to attain. Yet, without the mechanics, the tools of the trade, the conceptual level of the operational art cannot be brought to fruition. The development of the art and science must go hand in hand.

---

[138]See Major General I.B. Holly Jr., US Air Force Reserve, Retired, "Concepts, Doctrine, Principles: Are You Sure You Understand These Terms?," *Air University Review*, July - August, 1984, pp. 90-93.

Evidence does support the development of the science at the operational level. As the exercise reports demonstrate, much work is ongoing to take problem areas discovered and to seek solutions through evolving "how to" doctrinal manuals, modifications to force structure, training focus, etc. This part of the system seems to be working.

Evidence in applying the operational "art" is less conclusive. Even though there is little evidence of application, several factors limit revelation. As previously mentioned, the security classifications of the exercises and the close-hold nature of the reports make analysis difficult. Critical analysis of general officers and senior level staffs are not widely disseminated. Yet without such introspection, how are we to expand our level of understanding and experience in applying the operational art?

At the tactical level, we have developed excellent programs to exercise units and gain experience. The Combat Training Centers provide this capability at the battalion and brigade level; the Battle Command Training Program provides it for divisions and corps. Both are institutionalized programs providing extensive facilities and a capable opposing force that exercise units in an intensive, realistic environment. They also provide the institution necessary to compile lessons learned, analyze them, and provide feedback to the field and to the doctrine community.

No such system exists to institutionalize excellence at the operational level. Suggestions include a multifaceted program to address this shortcoming, combining an increase of historical exercise analysis in the officer schools, a formal individual study program, more emphasis on staff rides and terrain walks, and centrally located exercise training sites specifically designed for operational level

exercises.[139] General Galvin's initiatives in Europe demonstrate moves in this direction. These and similar efforts should be closely analyzed and exploited if proven effective. Nor is there a single repository to collect, analyze, and exploit lessons learned. The Center For Army Lessons Learned (CALL) has this charter yet focus to date has been almost exclusively at the tactical level.[140]

Attaining proficiency at the operational level will be a continuous, difficult effort. No single solution can provide the answer. The evolution of doctrine must continue as we work through the problems of application. This will provide part of the solution. Doctrinal education is also a critical component. Technology in both warfighting and training simulation systems have demonstrated potential. All is for naught, however, unless we aggressively practice the art and science of what we preach. Exercises need to be a combination of computer simulations at a sophistication level comparable to tactical simulations like BCTP and field training exercises involving actual troop maneuvers to retain the human dimension and the fog and friction elements. Results need to be collected, sanitized, analyzed, and disseminated to the field and to the doctrine writing community. As threats, force structures, and technology change, we must continually exercise operational level commanders and their staffs with the tools of the present and with an eye on the future. *He who falls asleep during this process may never wake up.*[141]

---

[139]Turlington, p. 61. Also see Holder, "Training for the Operational Level," and Gordon R. Sullivan, MG, USA, "Learning to Decide at the Operational Level," *Military Review*, October, 1987.

[140]Michael D. Heredia, "Preparing for War: Peacetime Campaign Planning," *Military Review*, August 1989, p. 60.

[141]This is actually a paraphrase of Mikhail Tukhachesvskiy: *New weapons call for the total and radical reorganization of methods of warfare, and he who falls asleep during this process may never wake up.* Quoted by Holder, "Training for the Operational Level," p. 13.

BIBLIOGRAPHY

Books

Bellamy, Chris. *The Future of Land Warfare.* New York: St. Martin's Press, 1987.

Cimbala, Stephen J. *Extended Deterrence: The United States and NATO Europe.* Massachusetts/Toronto: D.C. Heath and Company, 1987.

Clark, Asa A. IV; Chiarelli, Peter W.; McKitrick, Jeffery S.; and Reed, James W., ed. *The Defense Reform Debate.* Baltimore and London: The Johns Hopkins University Press, 1984.

Clausewitz, Carl von. *On War.* Edited and translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1976.

Codevilla, Angelo. *The Cure That May Kill: Unintended Consequences of the INF Treaty.* Occasional Paper 35. Institute for European Defense for Strategic Studies: Alliance Publishers Ltd., 1988.

Dean Jonathan. *Watershed in Europe.* Massachusetts [redacted] onto: Lexington Books, 1987.

Dunn, Keith A. and Staudenmaier, William O., ed. *Military Strategy in Transition: Defense and Deterrence in the 1980's.* Boulder: Westview Press, 1984.

Eisenhower, Dwight D., *Papers of Dwight David Eisenhower: The Chief of Staff,* edited by Louis Galambas, John Hopkins Baltimore, Maryland: University Press, 1979.

Fuller, J.F.C., *The Conduct of War, 1789-1961.* New York: Minerva Press, 1968.

Killebrew, Robert B. *Conventional Defense and Total Deterrence.* Wilmington, Delaware: Scholarly Resources Inc.: 1986.

Martin, Lawrence. *NATO and the Defense of the West.* New York: Holt, Rinehart, and Winston of Canada, Limited, 1985.

NATO Handbook. Brussels: NATO Information Service, April 1986.

Sun Tzu, *The Art of War,* translated by Samual B. Griffith. New York: Oxford University Press, 1963.

van Creveld, Martin, *Supplying War: Logistics from Wallenstein to Patton,* Cambridge: Cambridge University Press, 1978, p. 236.

Weigley, Russell F., *Eisenhower's Lieutenants.* Bloomington: Indiana University Press, 1981.

ARTICLES AND PERIODICALS

Atkeson, Edward B., MG(Ret). "The Operational Level of War," *Military Review*, March 1987, pp. 28-36.

Adams, Dwight L. "Operational Art in the Joint and Combined Arenas," *Parameters*, June 1988, pp. 33-39.

"Air Attack on the Modern Battlefield," *Air Land Bulletin*, 30 September, 1989, pp. 3-7.

Bingham, Price T., LTC, USAF, "NATO Needs a New Air Interdiction Approach," *Armed Forces Journal International*, October 1986, pp. 98-112.

_____. "Ground Maneuver and Air Interdiction in the Operational Art," *Parameters*, March, 1989, pp. 16-28.

Blackwill, Robert D. and Legro, Jeffery W. "Constraining Ground Force Exercises of NATO and the Warsaw Pact," *International Security*, Winter 1989/90 (Vol. 14, No. 3), pp. 68-98.

Bolt, William J. and Jablonsky, David. "Tactics and the Operational Level of War," *Military Review*, February 1987, pp. 2-19.

Brown, Robert F., "MR Update: Deception," *Military Review*, March 1987, pp. 46-47.

Cannon, Michael W., MAJ., "Battlefield Nuclear Weapons and Tactical Gridlock in Europe," *Military Review*, October 1989, pp. 53-65.

Carlson, Kenneth G. "Operational Level of Operational Art?," *Military Review*, October 1987, pp. 51-54.

Cimbala, Stephen J., "NATO Strategy and Nuclear Weapons: A Reluctant Embrace," *Parameters*, June 1988, pp. 51-64.

Cimeral, Ted A., "Moving the Heavy Corps," *Military Review*, July 1988, pp. 28-34.

Davis, Paul K., "The Role of Uncertainty in Assessing the NATO-PACT Central-Region Balance," *The RAND Corporation*, Santa Monica, CA, April 1988.

DePuy, William E., General, "Concepts of Operation: The Heart of Command, The Tool of Doctrine," *Army* August 1988, pp. 28-40.

_____. "For the Joint Specialist: Five Steep Hills to Climb," *Parameters*, , September 1989, pp. 2-12.

_____. "Toward a Balanced Doctrine: The Case for Synchronization," *Army*, November, 1984, pp. 18-25.

Donovan, G. Murphy, "Sustaining the Military Arts," *Parameters*, September, 1989, pp. 13-24.

Farndale, Gen. Sir Martin. "Exercise Reforger 87," *The Army Quarterly and Defense Journal*, January 1988, pp.

Fast, William R., "Operational Level Support in Search of Doctrine," *Military Review*, February 1988, pp. 46-53.

Flor, Ronald. "Major Exercises of NATO and Warsaw Pact Land Forces in Europe, 1984 - A Comparative Analysis," *Defense Analysis*, 1986, (Vol. 2, No. 3) pp. 191-193.

Galvin, John R., "ACE 89: A Work-out for NATO's Commanders," *International Defense Review*, October, 1989, pp. 1323-1324.

_____. "Getting the Right Mix of Training," *Janes Defence Weekly*, 23 September 1989.

_____. "Issues Facing NATO," *NATO's Sixteen Nations*, October 1989.

Griggs, Roy A. MAJ USAF, "Maritime Strategy on NATO's Central Front," *Military Review*, April, 1988, pp. 54-65.

Gudmundsson, Bruce, "Field Stripping the *Schwerpunkt*," *Marine Corps Gazette*, December 1989, pp. 30-32.

Hallada, Raphael J., Major General, "Fire Support Modernization: A Major Step Toward Deterrence," *Military Review*, August 1989, pp 5-22.

Hanne, William G. "AirLand Battle: Doctrine, Not Dogma," *Military Review*, June 1983, pp. 11 - 25.

Herbert, Paul H., "Deciding What Has to Be Done: General William E. Depuy and the 1976 Edition of FM 100-5, Operations," *Leavenworth Papers Number 16*, June 1988.

Heredia, Michael D. MAJ., "Preparing for War: Peacetime Campaign Planning," *Military Review*, August 1989, pp. 51-63.

Higgins, George A. "German and US Operational Art: A Contrast in Maneuver," *Military Review*, October 1985, pp.

Hines, Kerry L., "Operational Art: Competing Concepts of Deep Operations," *Journal of Soviet Military Studies*, April 1988, pp. 563-572.

Holder, L. D. "A Day for Operational Art," *Army*, March 1985, pp. 22 - 28.

_____. "Maneuver in the Deep Battle," *Military Review*, May 1982, pp. 54 - 61.

_____. "Training for the Operational Art," *Parameters*, Spring 1986, pp. 7-13.

[Holder, L.D.], "III Corps Movement Booklet," School of Advanced Military Studies reprint, AMSP Course 2 Readings, U.S. Army Command and General Staff College, Fort Leavenworth, KS, pp 1-121.

Holly, I.B. Jr., Major General, US Air Force Reserve, Retired, "Concepts, Doctrine, Principles: Are You Sure You Understand These Terms?," *Air University Review*, July - August, 1984, pp. 90-93.

Hughes, Robert W., Major, "The AirLand Battle: A Case for Sortie Distribution," *AirLand Bulletin*, 30 June 1989, pp. 5-10.

Jablonsky, David, "Strategy and the Operational Level of War," *Parameters*, Spring 1987, pp. 65-76.

Kahan, James P., "Air Support in CENTAG Deep Operations," *Military Review*, August 1989, pp. 65-73.

Lind, William S., "The Changing Face of War into the Fourth Generation," *Military Review*, October 1989, pp. 3-11.

_____. "Some Doctrinal Questions for the United States Army," *Military Review*, March 1977, pp 54-65.

Luvas, Jay, "Thinking at the Operational Level," *Parameters*, Spring 1986, pp. 1-6.

Luttwak, Edward N., "The Operational Level of War," *International Security*, Winter, 1980/81, pp 61-79.

Marks, James A., "OMGs in US Army Doctrine?" *Military Review*, June, 1989, pp. 38-42.

McQuie, Robert, "Battle Outcomes: Casualty Rates As a Measure of Defeat," *Army* (November 1987, pp. 30-34.

Meehan, John F. III, Colonel, "The Operational Trilogy," *Parameters*, Autumn 1986.

Menetry, Louis C., General, "Synergism of C3I elements in the Korean Theater," *Signal*, January 1989, pp. 25-26.

_____. "U.S. Military Posture on the Korean Peninsula," *Asian Defense Journal*, Aug 88, pp. 12-14.

Newell, Clayton R., "The Technological Future of War," *Military Review*, October 1989, pp. 22-28.

_____. "Logistical Art," *Parameters*, March, 1989, pp. 32-40.

"Not Much Room for Manoeuvre," *The Economist*, December 10, 1988, pp.

Nowak, Leonard G., "Synchronizing Deep Attack Support: The Corps Operations Cell," *Military Review*, July, 1988, pp. 20-26.

Odorizzi, Charles D. and Schemmer, Benjamin F. "An Exclusive AFJ Interview with General Glenn K. Otis," *Armed Forces Journal International*, January 1987, pp. 44 - 50.

Porter, Larry M., "Operational Art in the U.S. Army," *Military International*, October/December 1986, pp. 31-36.

Record, Jeffery. "Operational Brilliance, Strategic Incompetence," *Parameters*, Autumn 1986, pp. 2-8.

Rogers, Bernard W., General, "Follow-on Forces Attack (FOFA): Myths and Realities," *NATO Review*, December 1984, pp. 1-9.

Rogers, John B., "Synchronizing the AirLand Battle," BCTP reprint, Command and General Staff College, Ft Leavenworth, KS, 14 Aug 1987.

Romjue, John L. "From Active Defense to AirLand Battle: The Development of Army Doctrine 1973 - 1982," *TRADOC Historical Monograph*, June 1984, pp. 1-129.

_____. "AirLand Battle: The Historical Background," *Military Review*, August 1987.

Saint, Crosbie E. Lieutenant General, and Yates, Walter H., Colonel, Jr., "Attack Helicopter Operations in the AirLand Battle: Deep Operations," *Military Review*, July 1988, pp. 2-9.

Savorie, Thomas A., "Are We Deceiving Ourselves?" *Military Review*, March, 1987, pp 37-45.

Schreyach, John C., Col. "Fire Support for Deep Operations," *Military Review*, August 1989, pp. 28-36.

Sincere, Clyde J., CPT. "Target Acquisition for the Deep Battle," *Military Review*, August 1989, pp. 23-36.

Starry, Donn A. "Extending the Battlefield," *Military Review*, March 1981, pp. 31 - 50.

Staudenmaier, William O. "Deep Strike in US and NATO Doctrine," *Defense and Foreign Affairs*, February 1987, pp. 28 - 31.

Stewart, Mark. "Second Echelon Attack: Is the Debate Joined?" *Armed Forces Journal International*, September 1982, pp. 105 - 113.

Sullivan, Gordon R., MG, USA, "Learning to Decide at the Operational Level, " *Military Review*, October, 1987, pp. 16-23.

Tarantino, Frederick A., "A Substitute for NATO's Nuclear Option?" *Military Review*, March 1988, pp. 24-35.

Turlington, John E., "*Truly* Learning the Operational Art," *Parameters*, Spring, 1987, pp. 51-64.

Vlis, Arie Van Der. "AirLand Battle in NATO, a European View," *Parameters*, Summer 1984, pp. 10 - 14.

Vuono, Carl E., General, "Diverse Threats Demand Force Flexibility," *Army*, October 1985, pp. 200 - 203.

_____. "Sustaining Combat Power," *Army Logistician*, July-August 1988, pp. 2-6.

Wass de Czege, Huba and Holder, L. D. "The New FM 100 - 5," *Military Review*, July 1982, pp. 53 - 70.

West, Lowrey A.; Mooney, David J.; Pokorny, Anthony G.; "Field Artillery in the 21st Century," *Military Review*, August 1989, pp 15-

Wheeler, Albin G., MG, "Operational Logistics in Support of Deep Attack," *Military Review*, pp 12-19.

Woodmansee, John W. "Blitzkrieg and the AirLand Battle," *Military Review*, August 1984, pp. 21 - 39.

Government Documents

After Action Report: *REFORGER '86*, Combined Arms Training Activity, Ft Leavenworth, KS, 22 May 1986.

After Action Report: *FTX REFORGER, 87*, Combined Arms Training Activity, Ft Leavenworth, KS, 1987.

After Action Report: *USAREUR/CENTAG Crested Eagle/Carbon Edge '86 CPX*, Combined Arms Training Activity, Ft Leavenworth, KS, 18 July 1986.

After Action Report: *WINTEX-CIMEX 87*, Combined Arms Training Activity, Ft Leavenworth, KS, 23 March 1987.

After Action Report: *WINTEX-CIMEX 89*, Combined Arms Training Activity, Ft Leavenworth, KS, 16 August 1989.

After Action Report: *ULCHI FOCUS LENS 87 FTX*, Combined Arms Training Activity, Ft Leavenworth, KS, 19 February 1988.

Allied Training Publication (ATP) 35 A, *Land Forces Tactical Doctrine*, March 1984.

Center for Army Lessons Learned BULLETIN No. 3-88, *Deception*, Combined Arms Training Activity, Ft Leavenworth, KS, July 1988.

"Enhancing Alliance Collective Security," A Report by NATO's Defense Planning Committee, December 1988.

Evaluation Report, *TEAM SPIRIT, 1988.* HQ, Commander in Chief, U.S. Pacific Command, Evaluation Report (Secret-RELROK), dated 10 June 1988.

Exercise Directors Final Report: *LOGEX 88*, U.S. Army Logistics Center, Ft. Lee, VA, 1 December 1988.

Field Exercise Report, *War Fighter XX-X* (SECRET), Center for Army Lessons Learned, Combined Arms Training Activity, Ft Leavenworth, KS, 22 March 1989.

Field Exercise Report, *War Fighter XX-X* (SECRET), Center for Army Lessons Learned, Combined Arms Training Activity, Ft Leavenworth, KS, November 1989.

Field Manual 90-2, *Battlefield Deception (Final Draft, December 1987)*, SAMS Reprint, Course 3, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, pp. 5-18.

Field Manual (FM) 100-5, *Operations.* Washington, DC: Headquarters, Department of the Army, May, 1986.

Field Manual (FM) 100-6, *Large Unit Operations (Coordinating Draft)*, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 30 September 1987.

Field Manual (FM) 100-7, *The Army in Theater Operations*, (draft preface), 16 Jan 90. Provided by LTC Calvin R. Graef, CTAC, U.S. Army Command and General Staff College, Fort Leavenworth, KS.

Field Manual (FM) 100-15, *Corps Operations*, Washington, DC: Headquarters, Department of the Army, 13 September 1989.

Field Manual (FM) 100-20 / Air Force Manual (AFM) 2-20 *Military Operations in Low-Intensity Conflict (Final Draft)*, Washington, DC: Headquarters, Departments of the Army and the Air Force, 30 November 1987.

JCS PUB 3-03.1, *Joint Interdiction of Follow-on Forces Attack, (FOFA), (Test Pub)*, The Joint Chiefs of Staff, Washington D.C., 16 June 1988.

TRADOC Pam 11-9, *Blueprint of the Battlefield (draft)*, DA, U.S. Training and Doctrine Command, Ft. Monroe, VA, 9 June 1989.

TRADOC Doctrine Conference, *Doctrine for a Changing Army*, Concept Slides, HQ, U.S. Army Training and Doctrine Command, Ft Monroe, VA. dated 18-19 December 1989.

Trip Report, 5-26 Jan 90, *REFORGER 90 (CENTURION SHIELD)*, Crailshiem, FRG, Memorandum for Commander, Combined Arms Training Activity (CATA), by CPT Michael D. Thompson. CBS project officer, 30 January 1990.

U.S. Congress. House. *Soviet Readiness for War: Assessing One of the Major Sources of East-West Instability.* Report of the Defense Policy Panel, Committee on Armed Forces, 100th Cong., 2d sess., December 5, 1988.

U.S. Ground Forces and the Conventional Balance in Europe, The Congress of the United States Congressional Budget Office, Washington D.C.: U.S. Government Printing Office, June 1988.

Theses, Studies, and other Papers

Bourque, Stephen A., Major, "Maneuver and Destruction: A Refinement of Operational and Tactical Offensive Doctrine," MMAS Thesis, Command and General Staff College, Ft. Leavenworth, KS, 2 June 1989.

Curry, Ronald E., *et al.*, "Operational Maneuver in Europe," Advanced Operational Studies Fellows Case Study, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 28 February 1989.

Janes, William H., "Operational Art in NATO: How Will Politically Motivated Restrictions Affect Operational Maneuver?" Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 10 January 1988.

Kindsvatter, Peter S., "An Appreciation for Moving the Heavy Corps - The First Step...," Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, May, 1986.

Lambeth, Benjamin S. "Conventional Forces for NATO," Santa Monica, CA: The RAND Corporation, February 1987.

Mowery, James L., "The Division Aviation Brigade: Operational of Tactical?" Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 4 May 1987.

Scharpenberg, Henry S., "U.S. Armed Forces and the Operational Level of War -- Are We Prepared to Win?" Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 6 May 1988.

Starry, Michael D., "Deception at the Operational Level of War," Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 10 May 1986.

Stuart, H. Paul, "Operational Maneuver: Creator of the Decisive Point," Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, 1 May 1987.

Wass de Czege, Huba, "Toward a Science and Art of War," Monograph, School of Advanced Military Studies, Ft. Leavenworth, KS: US Army Command and General Staff College, April, 1983.

Interviews, Unpublished Notes

Allen, William V., MAJ. Phone conversations relating to status and content of FM 100-7. HQ, TRADOC, TRADOC DSCDOC (ATDO-A), Ft Monroe, VA. 31 January 1990.

Galvin, John R., GEN, Transcript, SACEUR's TV Taping *ACE '89: "Right Mix"*, SHAPE, 1 September 1989.

Graef, Calvin R., LTC. CTAC, Command and General Staff College, Ft Leavenworth, KS.

McDonough, James LTC. Military Assistant to the SACEUR. Phone conversation on 25 January 1990. Interview on 16 February 1990. Undated notes used by General Galvin in a public address and by LTC McDonough in a briefing at the School of Advanced Military Studies on 16 February 1990.

Thompson, Michael. Briefing Charts, Exercise *Centurion Shield '90: Battle Training Resolution*, undated slides used by USAREUR exercise division during REFORGER '90; copies provided by CPT Thompson, Combined Arms Training Activity, Ft Leavenworth, KS, 66027.